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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,402	07/09/2003	Suneel Tumkur Shankarappa	133320-1	8508

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
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NISKAYUNA, NY 12309

EXAMINER
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MARIAM, DANIEL G

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/15/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/615,402

Applicant(s)

SHANKARAPPA ET AL.

Examiner

DANIEL G. MARIAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-20, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 8-11 and 21-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/26/03 & 12/6/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 12, 14, 15-20, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivera, et al (6,341,153) in view of Lin, et al (6,205,239).

With regard to claim 1, Rivera, et al (hereinafter "Rivera") discloses a method for identifying flaws, defect, in a part being inspected (See Fig. 1), comprising: generating a 3-d representation of the part, the 3-d representation comprising 3-d spatial coordinates corresponding to different locations on the part, registering the 3-d spatial coordinates with corresponding locations of a part being inspected (which corresponds to CAD/CAM drawing stored/registered in database 12), generating an image of the part being inspected (See for example, col. 4, lines 35-62), identifying a flaw in the part being inspected from the generated image, correlating, i.e., comparing, a location of the flaw to a corresponding 3-d spatial coordinate (col. 4, line 63 – col. 5, line 9; and col. 3, lines 7-28). Although Rivera establishes an awareness of several subsequent processes (See for example, col. 3, lines 29-35 and lines 49-54), Rivera does not expressly call for controlling a device to perform an operation on the part being inspected at the flaw location using information of the corresponding 3-d spatial coordinate. However, Lin, et al (See for example, item 4, Fig. 2. Note also col. 27, lines 35-through col. 28, line 61 as to the three dimensional information) teaches this feature. Rivera and Lin, et al are

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combinable because they are from the same field of endeavor, i.e., detecting the location of defect in a manufactured object part (See for example, Fig. 2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Lin, et al with Rivera. The motivation for doing so is to perform an operation such as repairing the defect/anomaly once the defect/anomaly is accurately detected and identified, and to do so would at least aid the manufacturing process by identifying defects and taking corrective actions (See for example, col. 1, lines 41-45). Therefore, it would have been obvious to combine Lin, et al with Rivera to obtain the invention as specified in claim 1.

With regard to claim 2, a method according to claim 1, further comprising: displaying the generated image on a display device, and receiving an indication of the location of the flaw in response to an identified location on the display device (See for example, col. 3, lines 25-29 of Rivera; and col. 21, lines 33-58 of Lin, et al).

With regard to claim 3, a method according to claim 2, further comprising: identifying a pixel location based on the identified location on the display device, and determining the location of the flaw in the generated image based on the identified pixel location (See for example, Fig. 20; and col. 37, lines 42-47 of Lin, et al).

With regard to claim 4, a method according to claim 1, wherein the image is generated by *one of* X-ray imaging, ultrasound imaging, eddy current imaging, and infrared imaging (See col. 4, lines 35-43 of Rivera).

With regard to claim 5, a method according to claim 1, further comprising: receiving an indication of which operation the device is to perform on the part being inspected, wherein the

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operation performed by the device on the part being inspected corresponds to the received indication (See for example, col. 7, lines 4-27 of Lin, et al).

With regard to claim 6, a method according to claim 5, wherein the operation is *one of* a marking and a repair (See for example, item 4, in Fig. 2 or col. 25, line 60 – col. 26, line 4 of Lin, et al).

With regard to claim 7, a method according to claim 1, further comprising: identifying an approach vector (which broadly reads on repair instruction) that enables the device to contact and perform the operation on the part being inspected at the flaw location without obstruction from a portion of the part being inspected, and applying the approach vector to move the device to the flaw location without being obstructed by a portion of the part being inspected (See for example, col. 22, line 65 – col. 23, line 12; and item 4, in Fig. 2 of Lin, et al).

With regard to claim 12, a method according to claim 1, further comprising:  
creating a CAD representation of the part, and transforming the CAD representation of the part to generate the 3-d representation of the part. (See for example, col. 3, lines 6-16 of Rivera).

Claim 14 is rejected the same as claim 1 except claim 14 is directed to an apparatus claim. Thus, argument analogous to that presented above for claim 1 is applicable to claim 14 since an apparatus is defined by its functionality. Additionally, applicants' attention is invited to Fig. 1 of Rivera, and Fig. 2 of Lin, et al.

With regard to claim 15, a part analysis system according to claim 14, further comprising:  
a display device that displays the generated image; and a flaw identification unit that identifies a

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location of the flaw on the display device in response to a user, i.e., analyst/operator, input (See for example, col. 3, lines 25-29 of Rivera; and col. 21, lines 33-58 of Lin, et al).

Claims 16, 17, 18, 19, 20 and 25 are rejected the same as claims 3, 4, 5, 6, 7 and 12 respectively except claims 16, 17, 18, 19, 20 and 25 are directed to apparatus claims. Thus, arguments similar to those presented above for claims 3, 4, 5, 6, 7 and 12 are respectively applicable to claims 16, 17, 18, 19, 20 and 25.

3. Claims 13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivera in view of Lin, et al as applied to claims 1-7 and 12 above, and further in view of Thomas, et al. (5,818,718).

With regard to claim 13, Rivera (as modified by Lin, et al) discloses all of the claimed subject matter as already addressed above in paragraph XX, and incorporated herein by reference. Rivera (as modified by Lin, et al) mentions his system can be used, among other things, rapid prototype development (col. 3, lines 29-33), Rivera (as modified by Lin, et al) does not expressly call for wherein the 3-d representation of the part is in an STL format. However, Thomas, et al (See col. 6, lines 12-17) teaches this feature. Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Thomas, et al into the system of Rivera (as modified by Lin, et al), if for no other reason than to save the three dimensional information in an STL format so as to perform rapid prototyping (RP) (col. 6, lines 17-18).

Claim 26 is rejected the same as claim 13 except claim 26 is an apparatus claim. Thus, argument similar to that presented above for claim 13 is applicable to claim 26.

***Allowable Subject Matter***

4. Claims 8-11 and 21-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art of (Rivera and Lin, et al) do not disclose or fairly suggest wherein the identifying further includes: setting an initial approach vector for the device to contact and perform the operation on the part being inspected; determining whether any surface point of the part being inspected is present in a clearance region adjacent to the initial approach vector; and accepting the initial approach vector as the approach vector for moving the device to the part being inspected if no surface point is present in the clearance region.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent Numbers: 4755753, 5475613, 6064759, 6118540, 6714831 and 6950548.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. MARIAM whose telephone number is 571-272-7394. The examiner can normally be reached on M-F (7:00-4:30) FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW BELLA can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
DANIEL G MARIAM  
Primary Examiner  
Art Unit 2624

February 12, 2007